



Patent
703538.4018

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant : Monkhorst et al
Appl. No. : 10/658,886
Filing Date : September 9, 2003
Title : Controlled Fusion In a Field Reversed Configuration and Direct Energy Conversion

Group Art Unit : 3641
Examiner : Harvey Behrend

Docket No. : 703538.4018

RULE 132 DECLARATION

Commissioner for Patents
Washington, D.C. 20231

Dear Sir:

1. I, Bruno Coppi, am a professor of plasma physics at the Massachusetts Institute of Technology (MIT). My Curriculum Vitae and a representative list of publications are attached as Exhibit 1.

2. I am on the Scientific Advisory Board for Tri Alpha Energy, Inc. ("TAE"), the exclusive licensee of any patents that will issue from the above-referenced patent application. I have no financial interest in TAE or in the above-referenced patent application ("the application").

3. I am personally acquainted with Professor Norman Rostoker at the University of California Irvine. Professor Rostoker is one of the inventors listed in the application.

4. I have reviewed the application as filed on September 9, 2003. The subject matter of the application is directed to the field of plasma physics. I am of the opinion that one of ordinary skill in the art would possess a PhD in such fields of study as plasma physics, electrical engineering, pulsed power engineering, high current electronics or applied physics.

5. I am of the opinion that the application describes and teaches to one of ordinary skill in the art a novel method of converting fusion product energies into electric power that includes forming or creating an electric field with two poles. More particularly, at page 49 of the specification, the application describes a method of converting fusion products in regard to a first embodiment of an inverse cyclotron converter (ICC) depicted in figures 19A and 19B as having “four or more equal, semi-cylindrical electrodes 494 with small, straight gaps 497 make up the cylinder surface.” The application further describes the operation of the first embodiment of the ICC as follows at page 49:

In operation, an oscillating potential is applied to the electrodes 494 in an alternating fashion. The electric field E within the converter has a quadrupole structure as indicated in the end view illustrated in Fig. 19B. The electric field E vanishes on the symmetry axis and increases linearly with the radius; the peak value is at the gap 497.

6. The application then describes at page of the specification a second embodiment with an alternative electrode configuration as depicted in Figures 20A and 20B:

As shown in Figs. 20A and 20B, alternative embodiments of the electrode structures 494 in the ICC 420 may include two symmetrical semi-circular electrodes and/or tapered electrodes 494 that taper towards the ion collector 492.

7. I am of the opinion that one of ordinary skill in the art would understand that, as an alternative, the two (2) electrodes shown in Figures 20A and 20B could be substituted for the four (4) electrodes shown in Figures 19A and 19B. Further, one of ordinary skill in the art would understand that an oscillating potential applied to the two (2) electrodes in an alternating fashion, as

described in regard to the first embodiment, would result in an electric field E within the ICC having a two pole structure due to the two (2) electrodes and the two (2) gaps there between.

8. In view of the foregoing, I am of the opinion that the specification of the application includes a written description sufficient to convey to one of ordinary skill in the art that the applicants were in possession of an invention, as defined by claims 1 and 12, comprising a method of converting fusion product energies into electric power that includes forming or creating an electric field with two poles. In addition, I am of the opinion that the specification of the application includes a description sufficient to teach one of ordinary skill in the art how to form or create an electric field with two poles. Lastly, I am of the opinion that claims 1 and 12 clearly and definitely claim a method of converting fusion product energies into electric power that includes forming or creating an electric field with two poles, which is sufficiently described in the specification of the application.

9. I certify under penalty of perjury that the information submitted in this declaration is all true and correct.

Respectfully Submitted,

Dated: 26 Aug. '04

By: Bruno Coppi
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